Force Protection

Systems Effectiveness Assessment (SEA) Process

A Performance-based Methodology for the Design & Evaluation of Physical Protection Systems

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Purpose

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- Provide an executive level presentation of the Systems Effectiveness Assessment (SEA) Process in use by the Force Protection Program Office

Physical Security Systems (PSS) Design Methodologies

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- Feature Criteria or Compliance-based
- Performance-based

Feature Criteria Approach

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- Feature Criteria – traditional approach
  - Compliance based design and evaluation methodology
  - Cookie cuter approach – one system meets needs of all facilities
  - Based on a rigid set of requirements
- Not a *systems* approach
  - Doesn't integrate all aspects of a system
    - People, procedures, equipment, & technology
    - Detection, delay, & response viewed separately
  - PSS objectives & adversary threat spectrum seldom defined
  - Overall effectiveness and level of risk unknown
    - Dependent on "Gut Check"

Performance-based Approach

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- Performance-based – systems approach based on;
  - PSS objectives
  - Design Based Threat (DBT)
  - Overall PSS performance criteria
  - Consequence of PSS failure
  - Performance Testing
  - Integrates all aspects of a system
  - Identifies validated numeric characteristics to predict effectiveness -- provides rational for investment of PSS

SEA Objective

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- Determine probability of effectiveness (P_E) of PSS at meeting stated objectives
  - Probability of Interruption (P_I)
  - Probability of Neutralization (P_N)

Process Overview

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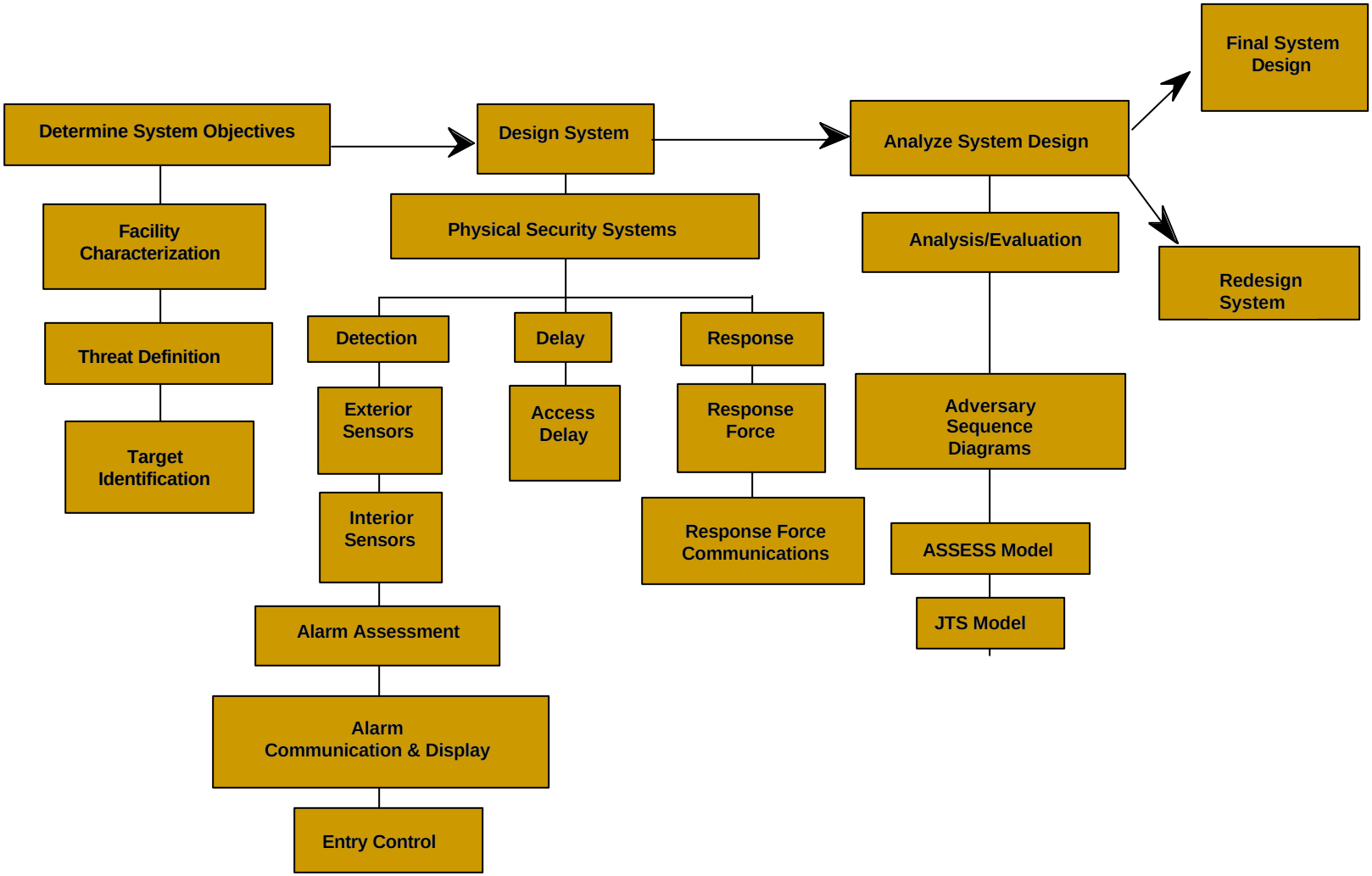

Probability of Interruption Analysis -- ASSESS Model

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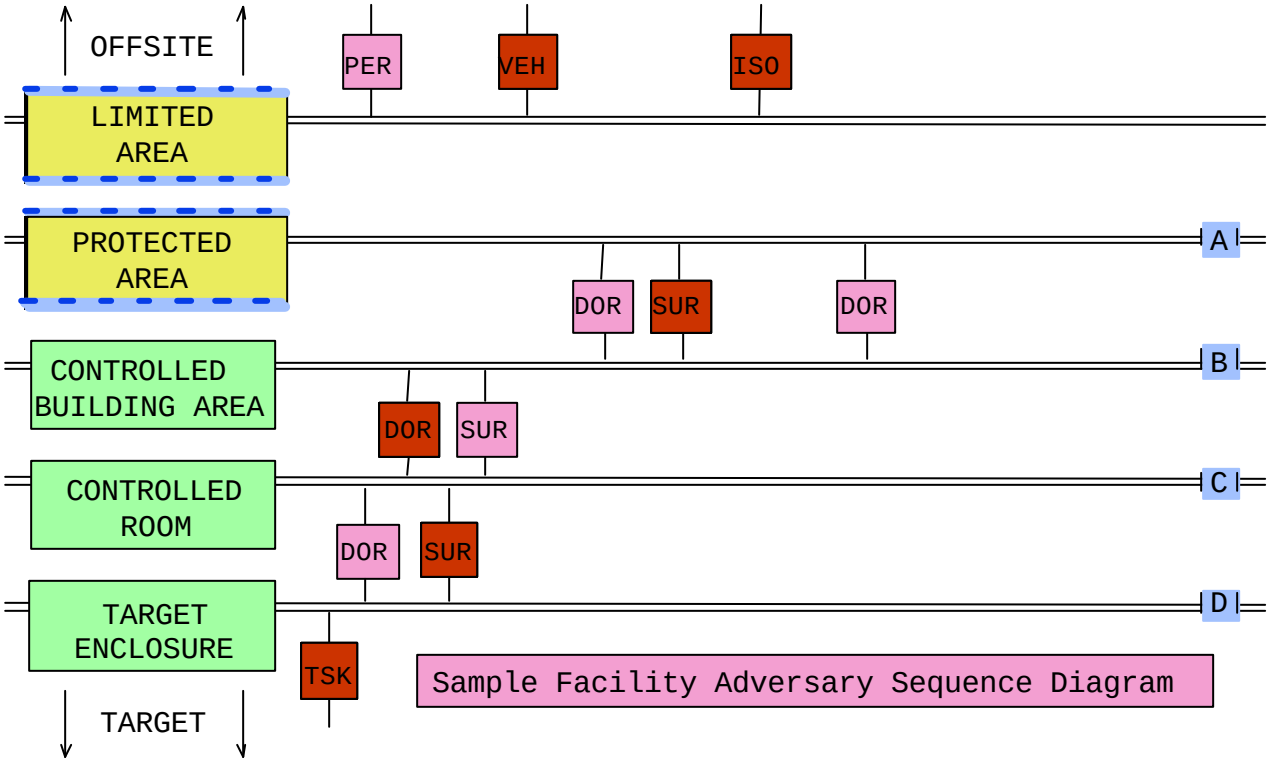

Probability of Interruption Analysis -- Theft Scenario

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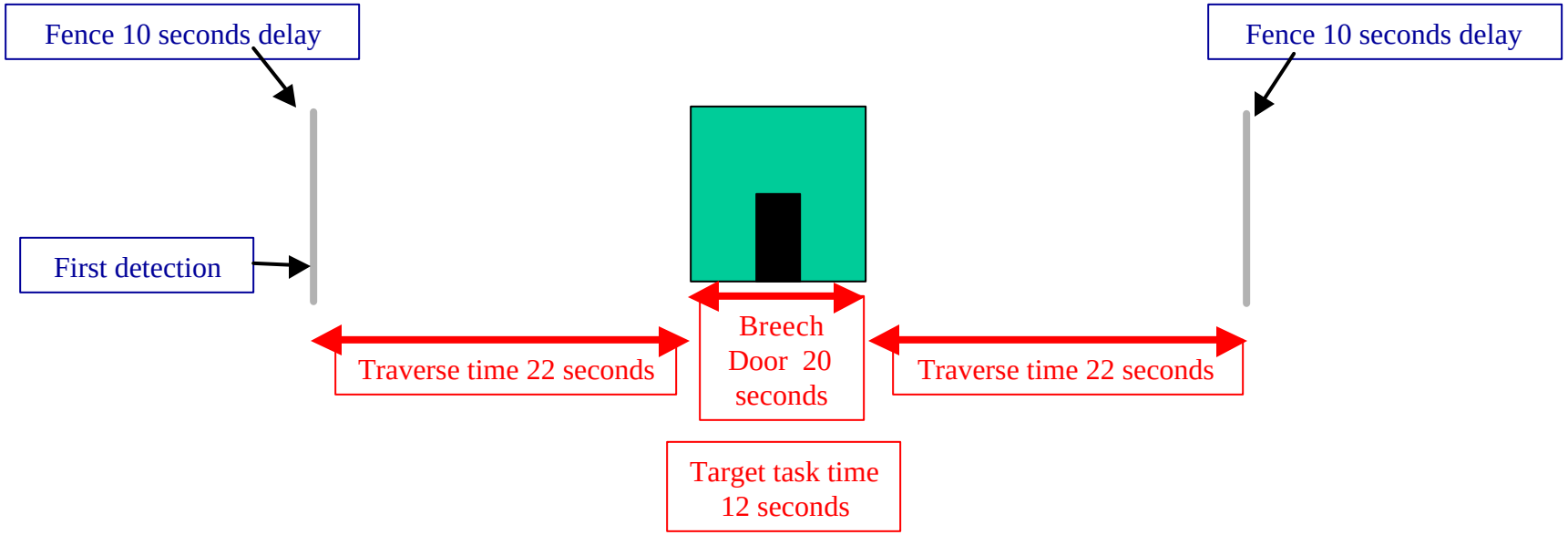
Adversary Sequence Time -- 96 seconds

Response Force Communication Time – 18 seconds

Response Force Time – 120 seconds

Total Response Time -- 138

Delta – 42 seconds – Bad guy wins



Probability of Neutralization Analysis -- JCATS Model

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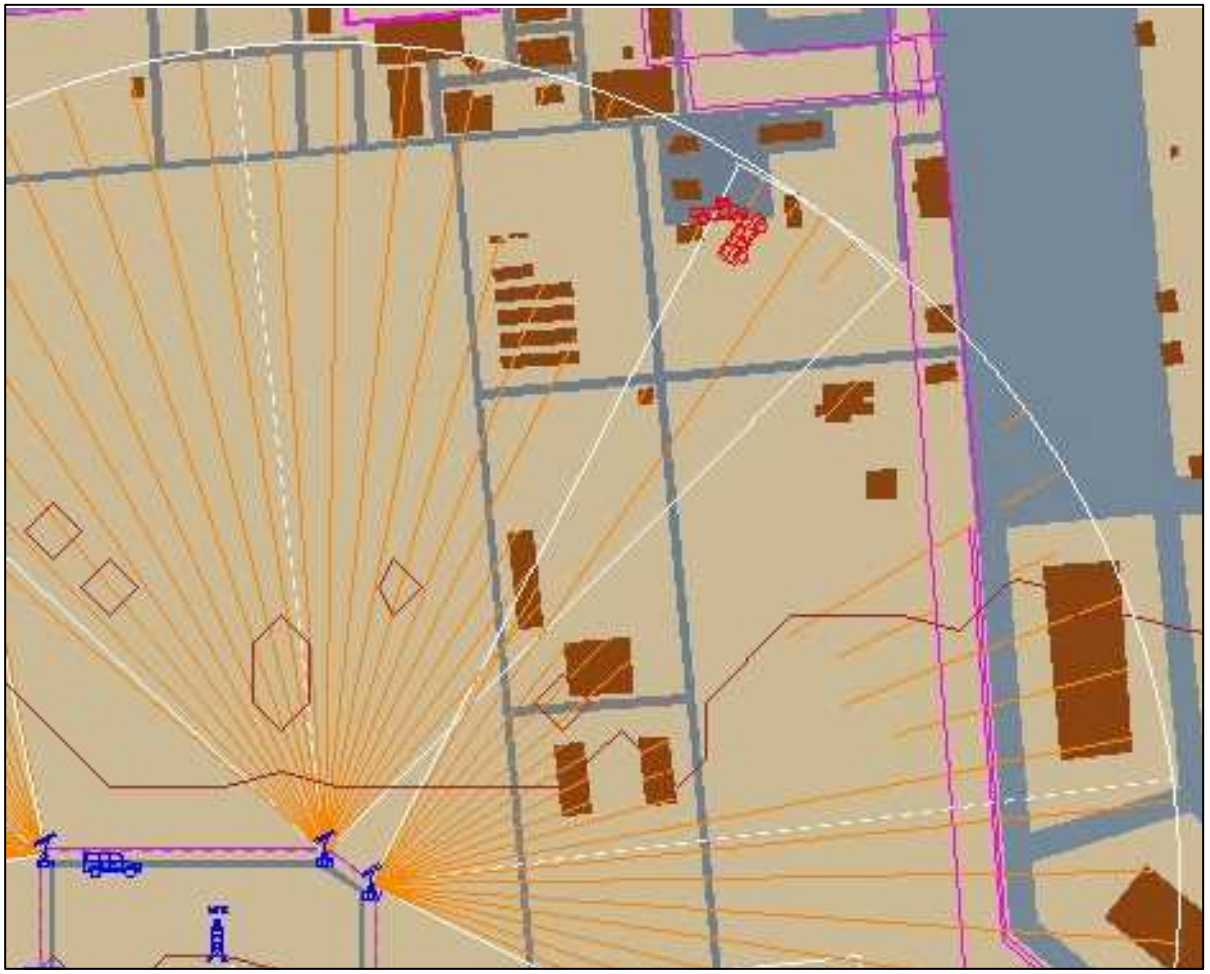

Analysis of the System -- Effectiveness Equation

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- **Effectiveness = P_A * [1 – (P_I * P_N)] * C**
  - **Is the current system effective – can we accept the level of effectiveness**
  - **Can we improve the system – at what cost**

P_A = Probability of Attack
P_I = Probability of Interruption
P_N = Probability of Neutralization
C = Consequence

QUESTIONS